

THE PROFESSIONAL PC TECHNICIAN

In this chapter, you will learn:

- ◆ How to make and keep excellent customer relationships
- ◆ How to maintain a successful help desk
- ◆ How professional organizations and certifications can help you be a better PC technician
- ◆ About software copyrights and software piracy
- ◆ About how to stay abreast of new technology

As a professional PC technician, manage your professional career by staying abreast of new technology and striving for top professional certifications. In addition, you should maintain excellent customer relationships and professionalism, and seek opportunities for joining professional organizations. In Chapter 8, “Troubleshooting Fundamentals,” you learned how to work with customers while trying to solve a problem for them. The chapter discussed what types of questions to ask, how to pose them, and how to maintain good customer relations. This chapter builds on that information, also addressing other topics that will help establish you as a high-quality PC professional.

As you know, PC technicians provide service to customers over the phone, in person on-site, and sometimes in a shop where they have little customer contact. While each setting poses specific challenges, almost all of the recommendations made in this chapter apply across the board. After all, even if your company is contracted to provide on-site service, you most likely will try to help solve problems first by phone. And even if you work in a shop, you might get calls from customers with questions or complaints. Focus on polishing all the skills needed in all the service settings in which you may find yourself.

WHAT CUSTOMERS WANT: BEYOND TECHNICAL KNOW-HOW

Probably the most significant indication that a PC technician is doing a good job is that his or her customers are consistently satisfied. The principle to follow to satisfy your customers is simple: provide excellent service and treat customers as you would want to be served and treated in a similar situation. Think about when you have been dependent on service technicians for help. Some probably helped you quickly, some needed a bit more time, and in some situations, the technician had to turn to someone else to help you. Many factors most likely affected your level of satisfaction, but one characteristic probably determined whether you were satisfied with the service you received: if you believed that the person did his or her best for you in your situation, you were much more likely to be satisfied with his or her performance. The right attitude from a service technician can be the deciding factor between satisfied and dissatisfied customers.

People who are personally committed to doing their very best in every situation tend to be the successful ones. If you have not already done so, make the personal commitment right now to always give your best in your profession, whether you plan on being a PC technician or not; this one decision can catapult you to success.

Part of giving your best is to be prepared, both technically and nontechnically. Being prepared includes knowing what customers want, what they don't like, and what they expect from a PC technician.

Your customers can be “internal” (you both work for the same company) or “external” (your customers come to you or your company for service). Customers can be highly technical or technically naive, represent a large company or simply own a home PC, be prompt or slow at paying their bills, want only the best (and be willing to pay for it) or be searching for bargain service, be friendly and easy to work with or demanding and condescending. In each situation, the key to success is always the same: don't allow circumstances or personalities to affect your personal commitment to excellence.

We've all heard, “If a job's worth doing, it's worth doing well.” A disgruntled coworker once told me, “I'll do the job, but don't expect me to give my best. It just won't happen.” Think of the worst situation you could be in with a customer—one that would cause you to take the same attitude as my disheartened coworker. Now that you've pictured that situation, see yourself doing your very best in it, not because of the situation or people involved, but because of *you* and *your* personal commitment to excellence. See the difference? A person's professional (or unprofessional) response should have nothing to do with specific circumstances and everything to do with the person. Incorporate this principle into your work, and you'll be an asset to your organization, personally successful, and favored in your profession. Up to this point, this book has emphasized your becoming a competent PC technician; the value of this cannot be overemphasized. However, all customers, whether technical or nontechnical, want more from you than technical proficiency. Listed below are qualities that distinguish one competent technician from another in the eyes of the customer. Specific ways to reinforce these qualities in your service are discussed later under “Learning to Be a Better Communicator.”

- **Positive and Helpful Attitude.** A positive and helpful attitude helps to establish good customer relationships. Customers appreciate a friendly disposition and positive outlook. Smile. Don't belittle your customer's choice of hardware or software. Don't complain. Give compliments and state things positively when you can. Be empathic; put yourself in the customer's situation and respect his or her needs. Express your concern, especially when you are the bearer of bad news. A brief but sincere apology for the customer's complaint might take care of the customer, and can allow you to move forward and solve the problem quickly.
- **Dependability.** Customers appreciate those who do as they say. If you promise to be back at 10:00 the next morning, be back at 10:00 the next morning. If you cannot keep your appointment, never ignore your promise. Call, apologize, let the customer know what happened, and reschedule your appointment.
- **Being Customer-Focused.** When you're working with or talking to a customer, focus on him or her. Don't be distracted. Listen; take notes if appropriate. Make it your job to satisfy this person—not just your organization, your boss, your bank account, or the customer's boss. It might not always be possible to give customers exactly what they ask for, especially when a customer is not paying the bill directly, but try your best.
- **Credibility.** Convey confidence to your customers. Being credible means being technically competent and knowing how to do your job well, but a credible technician also knows when the job is beyond his or her level of expertise and when to ask for help. In most organizations, if you cannot address a customer's problem, you follow policies and procedures to pass the problem to more experienced or resourceful personnel. This process of passing the problem up organizational levels is often called **escalating**. Don't be afraid to escalate when you have exhausted your efforts or knowledge. Customers appreciate a technician who cares enough about their problem to take it to his or her boss.
- **Integrity and honesty.** Don't try to hide your mistakes—not with your customer or with your boss. Everyone makes mistakes, but don't compound them with a lack of integrity or failing to assume responsibility. Accept responsibility and do what you can to correct the error. When you take this approach to your mistakes, your credibility with your customer (and your boss) rises.
- **Know the law with respect to your work.** For instance, observe the laws concerning the use of software. Don't use or install pirated software (copies of software made in violation of the licensing agreement with the original purchaser). See the "Protecting Software Copyrights" section for details. You are expected to know what is legal and illegal in a software installation. Set an example by personally committing yourself to using only legally obtained software on your own PC and on your company's or customers' PCs. When asked if certain actions are legal, have the answer or know how to get it. You will be viewed by others as someone who can be trusted.

- **Professionalism.** Customers want a technician to look and behave professionally. Dress appropriately for the environment. For example, don't arrive at a customer site in a T-shirt and shorts or use the phone without permission. Consider yourself a guest at the customer site. See Chapter 8 concerning how to handle yourself on a site visit: what to do and not to do.
- **Perform your work in a professional manner.** If a customer is angry, allow the customer to vent, keeping your own professional distance. Remain calm and undefensive. (You do, however, have the right to expect a customer not to talk to you in an abusive way.)

SUPPORT CALLS: PROVIDING GOOD SERVICE

Customers want good service. Even though each customer is different and might expect different results, the following characteristics consistently constitute good service in the eyes of most customers.

- The technician responds and completes the work within a reasonable time.
- For on-site visits, the technician is prepared for the service call.
- The work is done right the first time.
- The price for the work is reasonable and competitive.
- The technician exhibits good interpersonal skills.
- If the work extends beyond a brief on-site visit or phone call, the technician keeps the customer informed about the progress of the work.

Planning for Good Service

Whether you support PCs on the phone, on-site, or in a shop, you need a plan to follow when you approach a service call. Chapter 8 gave many guidelines and specific suggestions about PC troubleshooting from a technical point of view. This section surveys the entire service situation—from the first contact with the customer to closing the call. Follow these general guidelines when supporting computers and their users.

Taking the Initial Call

Almost every support project starts with a phone call, and your company likely has a policy with specific instructions on the information you should take when answering that initial call. Follow the guidelines of your company.

Don't assume that an on-site visit is necessary until you have asked questions to identify the problem and asked the caller to check and try some simple things while on the phone with you. For example, the customer can check cable connections, power, and monitor settings, and can look for POST error messages. Only after you have determined that the problem cannot be easily resolved on the phone should you make an appointment to go to the customer's

location or ask the customer to bring the PC to you. If an on-site visit is needed, make an appointment and fill out the proper documentation (discussed below) while the caller is on the phone.

Customer Service Policies

Be familiar with your company's customer service policies. You might need to refer questions about warranties, licenses, documentation, or procedures to other support personnel or customer relations personnel. Your organization might not want you to answer some questions, such as questions about upcoming releases of software or new products, or what your personal or company experience has been supporting particular hardware or software.

Be clear on how your organization wants you to handle these situations, and stay current with new information. You might find it helpful to get to know other employees at your company and their specialties. Then you will know who to call when confronted with a difficult or critical situation that is beyond your expertise.

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Troubleshooting

After reviewing your company's service policies, follow these general guidelines for effective troubleshooting:

- Let the customer explain the problem in his or her own way. Take notes, and then interview the customer about the problem so you understand it thoroughly. Have the customer reproduce the problem and carefully note each step taken and its results. This process gives you clues about the problem and about the technical proficiency of the customer, which helps you know how to communicate with the customer. (See Chapter 8 for specific questions you can ask.)
- Search for answers. If the answers to specific questions or problems are not evident, become a researcher. Learn to use online documentation, expert systems, and other resources that your company provides. See the "Recordkeeping and Information Tools" section for more details.
- Develop your troubleshooting skills. Isolate the problem. Check for user error. What works and what doesn't work? What has changed since the system last worked? Reduce the system to essentials. Check the simple things first. Use the troubleshooting guidelines in Appendix E to help you think of approaches to test and try.
- If you have given the problem your best, but still haven't solved it, ask for help, as discussed below.

Asking for Help

You learn when to ask for help from experience. Once you have made a reasonable effort to help, and it seems clear that you are unlikely to be successful, don't waste a customer's time. Ask a coworker for help or escalate the problem according to your company's policy. Many times, describing the problem to a coworker helps you think through it more thoroughly, and reminds you of the solution you already know.

Documentation and Other Aids

After a call, create a written record to build your own knowledge base. Record the initial symptoms of the problem, the source of the problem you actually discovered, how you made that discovery, and how the problem was finally solved. Don't waste time researching a problem more than once. Write down what you know so you retain the knowledge you have gained.

Organize your documentation for quick reference. For example, you can file documentation according to symptoms or according to solutions. In your documentation, carefully record the problem's symptoms and what you did to solve them. Later, you can save time by following your own instructions created from past calls.

Making a Service Call

When a technician makes an on-site service call, customers expect him or her to have both technical and interpersonal skills. Prepare for a service call by reviewing information given you by whoever took the call. For example:

- Know the problem you are going to address.
- Know what computer, software, and hardware need servicing.
- Know the urgency of the situation.
- Arrive with a complete set of equipment appropriate to the visit, which might include a tool kit, flashlight, multimeter, grounding strap and mat, and bootable disks that have been scanned for viruses.
- As discussed earlier, dress in an appropriate manner.

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Set a realistic time for the appointment (one that you can expect to keep) and arrive on time. If you are unavoidably delayed, call the customer and let him or her know what to expect. When you arrive at the customer's site, greet the customer in a friendly manner. Use Mr. or Ms. and last names rather than first names when addressing the customer, unless you are certain that the customer expects you to use first names. The first thing you should do is listen—save the paperwork for later.

- Listen carefully to the customer explain the problem.
- Allow the customer to say everything he or she wants to say before you make suggestions or offer solutions.
- When talking with the customer, judge the technical knowledge that the customer has, and speak with the customer at that level.
- Never respond to the customer in a condescending or patronizing way.

As you work, be as unobtrusive as possible. Don't make a big mess. Keep your tools and papers out of the customer's way. Don't use the phone or sit in the customer's desk chair without permission. If the customer needs to attend to his or her own work while you are

present, do whatever is necessary to accommodate that. Remember that you are a guest at the customer's site, and act accordingly.

Express genuine concern for the customer's problem and predicament. Although you want a customer to have confidence in your skills to resolve the problem, do not project the attitude that the problem is not serious.

Keep the customer informed:

- Once you have collected enough information, explain to the customer what the problem is and what you must do to fix it, giving as many details as the customer wants.
- When a customer must make a choice, state the customer's options so that you are not unfairly favoring the solution that makes the most money for you as the technician or for your company.

Allow the customer time to be fully satisfied that all is working before you close the call. Does the printer work? Print a test page. Does the network connection work? Can the customer log on to the network and access data on it? If you changed anything on the PC after you booted it, reboot one more time to make sure that you have not caused a problem with the boot. It's tempting to stop when you have fixed the problem. However, double-check that you have not inadvertently caused a new problem. Take the time to convince yourself and the customer that he or she can simply go back to work after you leave.

After the problem is solved and the fix tested, one of your final steps should be to review the service call with the customer. Summarize the instructions and explanations you have given during the call. This is an appropriate time to fill out your paperwork and explain to the customer what you have written. However, if the customer is not interested or does not have the time to listen, then don't pressure him or her to do so.

Before you leave, if you see things that the customer can do to prevent this same problem or some other problem from occurring, share that knowledge with the customer. Explain preventive maintenance to the customer (such as deleting temporary files from the hard drive or cleaning the mouse). Most customers don't have preventive maintenance contracts for their PCs and appreciate your time to show them how they can take better care of their computers.

Phone Support

Providing phone support requires more interaction with customers than any other type of PC support. To give clear instructions, you must be able to visualize what the customer is seeing at his or her PC. Customers might have technical knowledge, or might be only slightly computer literate. Patience is required if the customer must be told each key to press or command button to click. Help-desk support requires excellent communication skills, good phone manners, and lots of patience and empathy.

During the call, follow the guidelines outlined in the "Be a Better Communicator" section. Make few, if any, assumptions. Have the caller check simple things, such as making sure that

the PC or monitor is plugged into a power source and that cables are securely and correctly connected. As your help-desk skills improve, you will learn to think through the process as though you were sitting in front of the PC yourself. Drawing diagrams and taking notes as you talk can be very helpful.

As with on-site service calls, let the user make sure that all is working before you close the phone call. If you end the call too soon and the problem is not completely resolved, the customer can be frustrated, especially if it is difficult to contact you again.

If you spend many hours on the phone at a help desk, use a headset instead of a regular phone to reduce strain on your ears and neck. Learn how to use your telephone system well so that you don't accidentally disconnect someone. If you are accidentally disconnected, call back immediately. Don't eat or drink while on the phone. If you must put callers on hold, tell them how long it will be before you get back to them. When the call is over, wait for the caller to hang up first. Don't complain about your job, your company, or other companies or products to your customers. A little small talk is okay and is sometimes beneficial in easing a tense situation, but keep it upbeat and positive.

Be a Better Communicator

Most people assume they are good communicators—that others understand what they are saying and that they in turn understand others. However, almost anyone can improve his or her communication skills by following some specific guidelines; this section presents those guidelines as they apply to PC support technicians. For the PC technician, on-the-job training often involves only technical knowledge and skills, not communication skills. Yet, without good communication skills, even a good technician can't effectively deliver his or her support. Customers often form their opinion of your organization on the basis of the way you communicate with them.

Communicating on the Phone

When someone calls asking for support, you must control the call, especially at the beginning. Follow these steps at the beginning of a service call.

- Identify yourself and your organization. (Follow the guidelines of your employer as to what to say.)
- Ask for and write down the name and phone number of the caller. Ask for spelling if necessary. If your help-desk supports businesses, get the name of the business that the caller represents.
- Your company might require that you obtain a licensing or warranty number to determine if the customer is entitled to receive your support free of charge, or that you obtain a credit card number, if the customer is paying by the call. Get whatever information you need at this point to determine that you should be the one to provide service before you start to address the problem. It might be necessary to refer the call to someone else in the organization, such as a customer service representative.

- Open up the conversation for the caller to describe his or her problem.

Be certain to write down a caller's name correctly, and use that name as you speak. Ask for a phone number in case you are disconnected during the call or need to call back later. As a caller describes his or her problem, listen carefully, focus on the call, and don't allow yourself to be distracted.

Show Concern for the Customer's Situation

Empathy promotes communication. You can communicate with empathy by saying things like, "I understand," "You've really had it rough!" "That's terrible," "I know you must be frustrated," and "I'm sorry you're having such a hard time." On the other hand, if you really don't care, don't try to fake it with one of these phrases because you'll most likely sound patronizing and insincere, which can alienate your customer.

Express Confidence

You can communicate confidence to your customer in the following ways:

- Speak calmly.
- Ask questions in a systematic way. A good way to do this is to have a written list of questions.
- Take your time, and pause when necessary. Don't allow the urgency of a situation to fluster you.
- Plan ahead how you will handle a situation in which you don't know what to do. For example, you can say, "Excuse me while I check with my coworkers," or you can say, "I've got to research this; I'll get back to you shortly." Be sure to say exactly when you will call back or return to the customer's desk.
- Don't be defensive about the software or hardware you are supporting, or about your own degree of knowledge or experience.
- Adjust your communication to your customer's level of technical ability.

Handling Difficult Situations

Be prepared to handle difficult situations when communicating with a customer on the phone or face to face. Here are a few guidelines.

When the Customer Is Not Knowledgeable A help-desk call is the most difficult situation to handle when a customer is not knowledgeable about how to use a computer. When on-site, you can put a PC in good repair without depending on a customer to help you, but when you are trying to solve a problem over the phone, with a customer as your only eyes, ears, and hands, a computer-illiterate user can present a very challenging situation. Here are some tips for handling this situation.

- Don't use computer jargon while talking. Describe things in a way that the customer can understand. For example, instead of saying, "Open File Manager," say,

“Do you see the yellow filing cabinet that has File Manager written underneath? Using your left mouse button, double-click on it.”

- Don't ask the customer to do something that might destroy settings or files, without first having him or her back them up carefully. If you think the customer can't handle what you need done, then ask for some on-site help.
- Frequently ask the customer what he or she sees on the screen to help you track the keystrokes and action.
- Follow along at your own PC. It's easier to direct the customer, keystroke by keystroke, if you are doing the same things.
- Give the customer plenty of opportunity to ask questions.
- Compliment the customer whenever you can, to help the customer gain confidence.
- If you determine that the customer cannot help you solve the problem without a lot of coaching, you may need to request that the caller have someone with more experience call you. Do this in a tactful manner, using expressions such as, “I think I need to discuss your problem with your on-site technical support. Could you have him or her call me?” This might become necessary if your time or the customer's time is valuable, and you simply cannot take extra time to guide him or her through each step.



When solving computer problems in an organization other than your own, check with technical support instead of only working with the PC user. Policies may have been set on the PC that prevent changes to the OS, hardware, or applications software of which the user is not aware.

When the Customer Is Overly Confident Sometimes a customer is proud of what he or she knows about computers and wants to give advice, take charge of a call, withhold information that he or she judges you don't need to know, or execute commands at the computer without letting you know, so that you don't have enough information to follow along. A situation like this must be handled with tact and respect for the customer. Here are a few tips.

- When you can, compliment the customer concerning his or her knowledge, experience, or insight. Let the customer know that you respect what he or she knows. If the customer does not feel that he or she must prove or establish his or her knowledge, then it is much easier for the customer to relax and be more helpful.
- Ask the customer's advice. Say something like, “What do you think the problem is?” Do this to let customers know that you respect their knowledge, and because they might have the answer. (However, don't ask this question of customers who are not confident because they most likely don't have the answer and might lose confidence in you.)

- Slow the conversation down. You can say, “Please slow down. You’re moving too fast for me to follow. Help me understand.”
- Don’t back off from using problem-solving skills. You must still have the customer check the simple things, but direct the conversation with tact. For example, you can say, “I know you’ve probably already gone over these simple things, but could we just do them again together?”
- Be careful not to accuse the customer of making a mistake.
- Use technical language in a way that conveys that you expect the customer to understand you.

When the Customer Complains When you are on-site or on the phone, a customer might complain to you about your organization, products, service, or the service and product of another company. Studies have shown that a dissatisfied customer who complains is more likely to continue to use your product or service than a dissatisfied customer who does not let you know. Consider the complaint to be helpful feedback that can lead to a better product or service and better customer relationships. A PC support person is expected to handle these complaints in a professional manner. Here are a few suggestions on how to do that.

- Listen to the complaint. Consider it valuable feedback.
- Remember that a genuine, empathic apology for whatever the customer has experienced can be very helpful. See if that allows you to move on to solving the problem. If it does, don’t spend a lot of time finding out exactly whom the customer dealt with and what exactly happened to upset him or her.
- Don’t be defensive. Everyone and every company makes mistakes. It’s better to leave the customer with the impression that you and your company are listening and willing to admit mistakes and learn from them than to defend yourself, your product, or your company.
- Empathize with the customer. Show that you are concerned about the problem.
- If the customer is complaining about a product or service that is not from your company, don’t start off by saying, “That’s not our problem.” Instead, listen to the customer complain. Don’t appear as though you don’t care.
- If the complaint is against you or your product, identify the underlying problem if you can. Ask questions and take notes. Then pass these notes on to whoever in your organization needs to know. The complaint might be used to improve the product or service.

When the Customer Is Angry I once worked as the fourth and final level of support at a help desk. When calls arrived at my desk, three tiers of support had already given up. The customer was at the highest level of frustration and impatience. In a situation like this, if the customer is also angry, you must give special consideration. Allow the customer to be angry. You might be angry, too, in a similar situation. Listen carefully to what the customer is saying. Ask

questions. Be an active listener, and let the customer know that he or she is not being ignored. Look for the underlying problem and take notes if the customer is also complaining. Stay calm. Don't take the anger personally. Give the customer a little time to vent, and apologize when you can. Then start the conversation from the beginning, asking questions, taking notes, and solving problems. When the customer realizes that you are helping, doing your best, respecting his or her needs, and solving the problem, the anger will subside. Sometimes simply making progress or reducing the problem to a manageable state for the customer reduces his or her anxiety.

When the Customer Does Not Want to End a Phone Call Some customers like to talk and don't want to end a phone call. In this situation, when you have finished the work and are ready to hang up, you can ease the caller into the end of the call by doing these things:

- Ask if there is anything that needs more explanation.
- Briefly summarize the main points of the call, and then say something like, "That about does it. Call if you need more help."
- Be silent about new issues. Answer only with "yes" or "no." Don't take the bait by engaging in a new topic.
- Don't get frustrated. As a last resort, you can say, "I'm sorry, but I must go now."

When a Customer Is Beginning to Get Upset When you sense that a customer is beginning to get angry or upset, try these approaches to control the situation and get things back on track.

- If you have made a mistake, admit it and apologize.
- Apologize for the situation even if you don't think you're at fault.
- Summarize what you have both agreed on or observed so far in the conversation. This establishes and reinforces points of agreement.
- Point out ways that you think communication could be improved. For example, you might say, "I'm sorry, but I'm having trouble understanding what you want. Could you please slow down, and let's take this one step at a time."
- Reassure the customer that you will work on the problem until it is solved.

When You Can't Solve the Problem

You are not going to solve every computer problem you encounter. Knowing how to escalate a problem to those higher in the support chain is one of the first things you should learn on a new job. Each organization will have procedures in place as to how to do this, and it is essential that you familiarize yourself with your company's specific escalation policies and procedures. When escalation involves the customer, generally follow these guidelines:

- Before you escalate, first ask knowledgeable coworkers for suggestions toward solving the problem, which might save you and your customer the time and effort it takes to escalate.
- Know your company's policy as to how to escalate. What documents do you fill out? Who gets them? Do you remain the responsible "support" party, or does the person now addressing the problem become the new contact? Are you expected to still keep in touch with the customer and the problem, or are you totally out of the picture?
- Document the escalation. In the documentation, describe the problem as clearly as you can while keeping the description brief and concise. It's very important to include the detailed steps necessary to reproduce the problem, which can save the next support person lots of time. Engineers and other support personnel are normally very busy people and don't have the time to read long pages of information, but they also don't have the time to investigate for information that you already knew but failed to pass on.
- Pass the problem on according to the proper channels of your organization. This might mean a phone call, an online entry in a database, or an e-mail message.
- Tell the customer that you are passing the problem on to someone who is more experienced and has access to more extensive resources. Let the customer know when he or she should expect this new support person to call. In most cases, the person who receives the escalation will immediately contact the customer and assume responsibility for the problem. However, you should follow through, at least to the point where you know that the new person and the customer have made contact.
- If you check back with the customer only to find out that the other support person has not called or followed through to the customer's satisfaction, don't lay blame or point fingers. Just do whatever you can within your company guidelines to help. Your call to the customer will go a long way toward helping in the situation.

RECORDKEEPING AND INFORMATION TOOLS

If you work for a service organization, it will probably have most of the tools you will need to do your job, including forms, online recordkeeping, procedures, and manuals. In some cases, help-desk support personnel may have software to help them do their jobs, such as programs that support the remote control of customers' PCs (one example is pcANYWHERE), an online help utility, or a problem-solving tool developed specifically for their help desk.

There are several types of resources, records, and information tools that can help you with your work supporting PCs. These include:

- Copies of software or hardware you are expected to support. Specific software or hardware that you support must be available to you to test, observe, and study, and to use to re-create a customer's problem whenever possible.

- **User documentation.** You should have a copy of the same documentation that the user sees and be familiar with it.
- **Technical documentation.** Products, including both hardware and software, will likely have more **technical documentation** than just a user manual. This technical documentation should be made available to you by a company when you support its product.
- **Online help.** Online help targeted specifically to field technicians and help-desk technicians is often available. This online help will probably include a search engine that works by topics, words, error messages, and the like. An additional feature of some online help software is the ability of support personnel to write annotations directly into the online text, so that they and other technicians can benefit from new information. Some organizations have one or more persons whose sole responsibility is to keep this online help current.
- **Expert systems.** **Expert systems** software is designed and written to help solve problems. It uses databases of known facts and rules to simulate human experts' reasoning and decision-making processes. Expert systems for PC technicians work by posing questions about a problem, to be answered either by the technician or by the customer. The response to each question will trigger another question from the software, until the expert system arrives at a possible solution or solutions. Many expert systems are "intelligent," meaning that the system will record your input and use it in subsequent sessions to select more questions to ask and approaches to try. Expert systems are fun to use and develop, and they can be wonderful assets in a support organization.
- **Call tracking.** **Call tracking** can be done online or on paper. Most organizations will have a call-tracking system that tracks (1) the date, time, and length of help-desk or on-site calls, (2) causes of and solutions to problems already addressed, (3) who did what, and when, and (4) how each call was officially resolved. Call-tracking software or documents can also be vehicles used to escalate calls when necessary and to track the escalation. In addition, if an organization knows who its customers are (for example, who the registered users of its software are), this information will probably be made available to the call-tracking system. For small organizations, you might have to develop your own call-tracking system.

PROFESSIONAL ORGANIZATIONS AND CERTIFICATIONS

The work done by PC technicians has been viewed as a profession only within the past few years. As with other budding professions, professional organizations and certifications have taken a while to develop and to become recognized by the industry. The one most significant certifying organization for PC technicians is the **Computing Technology Industry Association (CompTIA)**, pronounced "comp-TEE-a"). CompTIA sponsors the **A+ Certification Program**, including managing the A+ Service Technician Certification Examination, which measures the knowledge of job tasks and behaviors expected of entry-level technicians. This book prepares you for this exam. To become certified, you must pass

two test modules: the core test and the DOS/Windows test. This book is designed to fully prepare you for both exams. A+ Certification is gaining increasing industry recognition, so it should be your first choice for certification as a PC technician. As evidence of this industry recognition, these companies now include A+ Certification in their requirements for employment:

- Compaq Computer Corporation requires that all work done under its warranty agreements be done by A+ Certified personnel.
- Digital Equipment Corporation requires A+ Certification for all international and domestic warranty work.
- ENTEX Information Services requires that all service employees have A+ Certification.
- GE Capital Services requires that all service employees have A+ Certification one year after hire.
- Inacom requires A+ Certification as a core competency for all service providers.
- Okidata requires that all field service technicians have A+ Certification.
- Packard Bell requires all employees to be certified within 90 days of hire.

Some other companies where A+ Certification is mandatory are:

- Aetna U.S. Healthcare
- BancTec, Inc.
- Computer Data, Inc.
- Computer Sciences Corp.
- Delta Airlines
- Dow Jones & Company
- FBI, U.S. Department of Justice
- Gateway 2000
- New Horizons
- Tandy Corporation
- TSS IBM
- US Airways
- Vanstar
- Wang

CompTIA has over 6,000 members, which include every major company that manufactures, distributes, or publishes computer-related products and services. For more information about CompTIA and A+ Certification, see the CompTIA Web site at www.comptia.org.

Other certifications are more vendor specific. For example, Microsoft, Novell, and Cisco offer certifications to use and support their products. These are excellent choices for additional certifications when your career plan is to focus on these products.

Why Certification?

Many people work as PC technicians without any formal classroom training or certification. However, by having certification or an advanced technical degree, you prove to yourself, your customers, and your employers that you are prepared to do the work and are committed to being educated in your chosen profession. Here are some reasons for seeking certification and advanced degrees:

- They are recognized proof of competence and achievement.
- They improve your job opportunities.
- They create a higher level of customer confidence.
- They often qualify you for other training and/or degrees.

STAYING ABREAST OF NEW TECHNOLOGY

In addition to becoming certified and seeking advanced degrees, the professional PC technician should also stay abreast of new technology. With the ever-changing technology of today, this can be quite a challenge. Helpful resources include: on-the-job training, books, magazines, the Internet, trade shows, interaction with colleagues, seminars, and workshops. Some magazines that routinely include excellent articles explaining new technology in detail are *PC Magazine*, *PC Today*, *Computer Shopper*, *PC Computing*, and *PC World*. Probably the best-known trade show is COMDEX and Windows World, where you can view the latest technology, hear industry leaders speak, and network with vast numbers of organizations and people. For more information about COMDEX and Windows World, see the Web site www.comdex.com.

Throughout this book you'll find references to Web sites for more information about a particular technology. In addition, try the Web sites listed in Table 20-1 for excellent up-to-date technical information about PCs.

Staying up to date concerning new technology begins with an attitude and commitment to self-improvement. Your education is primarily your own responsibility, and only secondarily the responsibility of your employer. Take advantage of opportunities presented by your employer for training, but remember that a personal commitment to continue to learn is more important than any training program offered by your employer.

Table 20-1 Technical support Web sites

Organization	Web Site
Advanced Services Network	www.asure.net
BYTE Magazine	www.byte.com
CNET, Inc.	www.cnet.com
COOK Network Consultants (Internet glossary)	www.cookreport.com
CyberCollege	www.cybercollege.com
DataFellows, Inc.	www.datafellows.com
internet.com Corporation	www.pcwebopedia.com
Kingston Technology (information about memory)	www.kingston.com
Microsoft technical resources	msdn.microsoft.com
MK Data	www.karbosguide.com
O'Reilly and Associates (PC hardware glossary)	www.oreilly.com/reference/dictionary
PC Guide	www.pcguide.com
PC Today Online	www.pc-today.com
PC World	www.pcworld.com
Sangoma Technologies, Inc.	www.sangoma.com
Steve Jenkins and Jenesys, LLC	www.winfiles.com
Tom's Hardware Guide	www.tomshardware.com
ZDNet (Publishes several technical magazines)	www.zdnet.com
Zoom Telephonics, Inc.	www.modems.com

PROTECTING SOFTWARE COPYRIGHTS

As a computer support technician, you will be faced with the legal issues and practices surrounding the distribution of software. When someone purchases software from a software vendor, that person has only purchased a **license** for the software, which is the right to *use* the software, and does not legally *own* the software; he or she therefore does not have the right to distribute the software. The right to copy the work, called a **copyright**, belongs to the creator of the work or others he or she has transferred this right to. A professional PC technician should understand and follow the laws that apply to the sale and distribution of software.

As a PC technician you will be called upon to install, upgrade, and customize software. You need to know where your responsibility lies in upholding the law, especially as it applies to software copyright. Copyright is intended to legally protect the intellectual property rights of organizations or individuals to creative works, whether they be books, images, or, in the case of this discussion, software. While the originator of a creative work is the original owner of a copyright, copyright can be transferred from one entity to another.

The Federal Copyright Act of 1976 was designed in part to protect **software copyrights** by requiring that only legally obtained copies of software be used; the law also allows for one

backup copy of software to be made. Making unauthorized copies of original software violates the Federal Copyright Act of 1976, and is called **software piracy**, or, more officially, software copyright infringement. Making a copy of software and then selling it or giving it away is a violation of the law. Because it is so easy to do this, and because so many people do it, many people don't realize that they're breaking the law. Normally only the person who violated the copyright law is liable for infringement; however, in some cases, an employer or supervisor is also held responsible, even when the copies were made without the employer's knowledge. The Business Software Alliance (a membership organization of software manufacturers and vendors) has estimated that 26% of the business software in the United States is obtained illegally and that, in 1995, the worldwide illegal use of software cost the software industry more than \$13 billion.

Vendors may sometimes sell counterfeit software by installing unauthorized software on computers for sale. This practice is called **hard-disk loading**. Vendors have even been known to counterfeit disk labels and Certificates of Authenticity. Warning signs that software purchased from vendors is pirated include:

- No end-user license is included.
- There is no mail-in product registration card.
- Software is installed on a new PC, but documentation and original disks are not included in the package.
- Documentation is photocopied, or disks have handwritten labels.

Several technological methods have been attempted to prevent people from making copies of software. These methods include making distribution disks copy-resistant and putting **holographic images** on software packages. Nontechnical methods include stiffer fines and sentences for infringement and more aggressive lawsuits.

In the past few years, site licensing, whereby a company can purchase the rights to use multiple copies of software, has grown in popularity. There are many ways that software is licensed today in order to accommodate the growing demands of companies that distribute software to PCs from network servers or execute software directly off the server. Read the licensing agreement of any software to determine the terms of distribution.

One of two associations committed to the prevention of software piracy is the Software Information Industry Association, a nonprofit organization that educates the public and enforces copyright laws. Their Web address is www.siiia.net, and their antipiracy hotline is 1-800-388-7478. Another organization is the Business Software Alliance, which manages the BSA Anti-Piracy Hotline at 1888NOPIRACY. The BSA can also be reached at their e-mail address: software@bsa.org. Their Web site is www.bsa.org. These associations are made up of hundreds of software manufacturers and publishers in North and Latin America, Europe, and Asia. They promote software raids on large and small companies, and, in the U.S., they receive the cooperation of the United States government to prosecute offenders.

What Does the Law Say?

The Federal Copyright Act of 1976 protects the exclusive rights of copyright holders. It gives legal users of software the right to make one backup copy. Other rights are based on what the copyright holder allows. In 1990, the United States Congress passed the Software Rental Amendment Act, which prevents the renting, leasing, lending, or sharing of software without the expressed written permission of the copyright holder. In 1992, Congress instituted criminal penalties for software copyright infringement, which include imprisonment for up to five years and/or fines of up to \$250,000, for the unlawful reproduction or distribution of 10 or more copies of software. In short, it is illegal for a person to give an unauthorized copy of software to another individual, even if they both work for the same organization.

What Are Your Responsibilities to the Law?

Your first responsibility as an individual user is to use only software that has been purchased or licensed for your use. As an employee of a company that has a site license to use multiple copies of the software, your responsibility is to comply with the license agreement, whatever that is. It is also your responsibility to purchase only legitimate software. Purchasers of counterfeit or copied software face the risk of corrupted files, virus-infected disks, inadequate documentation, and lack of technical support and upgrades, as well as the legal penalties for using pirated software.

CHAPTER SUMMARY

- ❑ Customers want and expect more than just technical proficiency from a PC technician.
- ❑ Customers expect a technician to keep a positive and helpful attitude, to remain professional at all times, and to put the needs of the customer above all else.
- ❑ A PC technician is expected to respond to a call for service within a reasonable time, to be prepared for the service call, and to do the work right the first time.
- ❑ Good communication skills are an important attribute of a PC technician.
- ❑ A PC technician is a guest at the customer site and should act like a guest.
- ❑ Keeping records of service calls, help-desk calls, and bench work is important to identify trends and the need for training or information, and to help with future problem solving.
- ❑ When tracking a service call, a phone call, or bench work, always record the symptoms, the originating problem, and the solution. This information will help in future problem solving.
- ❑ CompTIA (Computing Technology Industry Association) sponsors A+ Certification, the industry-accepted certification for the PC technician.
- ❑ Staying abreast of new technology can be done by attending trade shows, reading trade magazines, researching on the Internet, and attending seminars and workshops.

- Software piracy—the use of software obtained in violation of the copyright owner’s specific terms—is against the law. A professional PC technician is committed to not using or installing pirated software.
- The Business Software Alliance and the Software Publishers Association are two associations committed to controlling software piracy.

KEY TERMS

A+ Certification — A certification awarded by CompTIA (The Computing Technology Industry Association) that measures a PC technician’s knowledge of the skills and behaviors expected of entry-level PC technicians. Many companies require that their service technicians have A+ Certification.

Call tracking — A system that tracks the dates, times, and transactions of help-desk or on-site PC support calls, including the problem presented, the issues addressed, who did what, and when and how each call was resolved.

Computing Technology Industry Association (CompTIA) — A membership trade association that sponsors A+ Certification, a valuable certification for PC technicians.

Copyright — An individual’s right to copy his/her own work. No one else, other than the copyright owner, is legally allowed to do so without permission.

Escalating — The process by which a technician passes a customer’s problem to higher organizational levels, if he or she cannot address the problem.

Expert systems — Computerized software that uses a database of known facts and rules to simulate a human expert’s reasoning and decision-making processes.

Hard-disk loading — The illegal practice of installing unauthorized software on computers for sale. Hard-disk loading can typically be identified by the absence of original disks in the original system’s shipment.

Holographic image — A three-dimensional image (created by holography) that is made up of a light-interference pattern preserved in a medium such as photographic film and that changes when the angle of view changes. Because making unofficial copies of holographic images is extremely difficult, they are often used to tag products, such as software packages, as original, making it difficult to distribute illegal copies.

License — Permission for an individual to use a product or service. A manufacturer’s method of maintaining ownership, while granting permission for use to others.

Software copyrights — Copyright is a legal concept (covered by the Federal Copyright Act of 1976) that encompasses the protection of the rights of an originator of a creative work, which can include software. With the exception of archival backups, copyrighted programs are illegal to copy without specific authorization from the copyright holder.

Software piracy — Making unauthorized copies of original copyrighted software.

Technical documentation — The technical reference manuals, included with software packages and peripherals, that provide directions for installation, usage, and troubleshooting.

User documentation — Manuals, online documentation, instructions, and tutorials designed specifically for the user.

REVIEW QUESTIONS

1. Assume that you are a customer who wants to have a personal computer repaired. List five main characteristics that you would want to see in your PC repairperson.
2. List and briefly discuss five practices that should be followed to make a technician a better customer-oriented service person.
3. What is one thing you should do when you receive a phone call requesting on-site support, before you make an appointment?
4. What can you do if you have made every effort to solve a problem, but it is still not solved?
5. You make an appointment to do an on-site repair, but you are detained and find out that you will be late. What is the best thing to do?
6. When you arrive for an on-site service call, how important is your greeting? What would be a good greeting to start off a good business relationship?
7. When making an on-site service call, what should you do before making any changes to software, or before taking the case off a computer?
8. What should you do after finishing your PC repair?
9. What is a good strategy to follow if a conflict arises between you and your customer?
10. When someone calls your help desk, what is the first thing you should do?
11. List the items of information that you would want to record at the beginning of a help-desk call.
12. What is one thing you can do to help a caller who needs phone support and is not a competent computer user?
13. Describe what you should do when a customer complains to you about a product or service that your company provides.
14. What are some things you can do to make your work at a help desk easier?
15. What is one printed source that you can use to stay abreast of new technology?
16. Why is it important to be a certified technician?
17. Examine the software license of some software currently installed on your PC. Is it legal to have this software installed on your PC at work and also installed on your PC at home?
18. List three things to check when you are considering the purchase of software to verify that the software is not pirated.
19. What two associations educate about and protect against software piracy?
20. What organization offers PC technician certification?

PROJECTS



A+ Certification

Go to CompTIA's Web site, www.comptia.org, and print out sample test questions for the A+ Certification exam. Include questions from the core and the operating system sample tests. Answer the questions for these sample tests. On the basis of the sample tests, how prepared do you think you are to take the A+ exam?



Practicing Help-Desk Skills

Work with a partner. One of you play the role of the customer, and the other the role of the help-desk technician. The customer calls, saying, "My computer won't work." The technician should lead the conversation by asking questions. Ask the appropriate questions to determine exactly what the problem is, and then check all cable connections for PC, monitor, mouse, keyboard, and power. Write down the questions you ask. (Don't forget to ask the customer's name, phone number, and so on.)



Customer Relationships

Work in a small discussion group of three to four people. Come prepared by writing a paragraph describing the worst situation in which you might realistically find yourself when servicing a PC. Read the paragraph to the group. Have the group discuss what would be the appropriate thing to do in this situation. Under the paragraph, write two column headings, Do and Don't. Write down the suggestions of the group for each column. For example, here is one sample paragraph for your discussion:

You respond to a customer call by traveling across town in heavy traffic to the customer's place of business. He insisted that you arrive promptly that same day, even though the call didn't come until 4:00 P.M. The customer told you on the phone that the PC would not boot. You had him check all connections and switches, but all seemed well. When you get to the site, the customer is angry because you took so long arriving and threatens to report you. When you check the PC, you discover that the monitor cable is not plugged into the computer case. What do you say and do?



A Self-Study of New Technology

Select a new hardware or software feature or product and do a self-directed study of the subject. Use magazines, books, and the Internet. Collect the information in a file folder and let it be the first folder of many that you keep on new technology. Some suggestions for your study are:

- Digital cameras
- FireWire
- Linux
- Windows 2000



Illegal Software

1. Search in Windows 9x Help for ways to identify illegal Microsoft software. Print out the warning signs that might indicate that software installed on your newly purchased PC, or available on a retail store shelf, might be illegal.
2. If you believe you have unknowingly purchased illegal software, see the Software Publishers Association Web site at www.sipa.net to find out what you can do about your situation.



Internet Search

1. Log on to the Internet and do a Web search. Enter the key words PC+troubleshooting, and list and describe five of the sites found. Also enter the key words PC+certification, and list three sites found.
2. In this chapter, under the heading, “Staying Abreast of New Technology,” select three of the Web sites listed and access the sites. Write one paragraph for each site, describing what type of technical information is available on the site to help a PC technician.

